testing of building stones, of the museums and collections of minerals and rocks within the limits of the kingdom, and of articles in the geology of Saxony.

W. S. B.

Notes. — The lavas of the early Tertiary volcanoes[1] of the Absaroka range on the east side of the Yellowstone National Park consist of a repeated succession of hornblendic and micaceous andesites, basalts, pyroxene, andesites, and finally a series of great flows of basalts. With these are associated immense deposits of tuffs, agglomerates, and igneous conglomerates.

Cushing[2] describes the augite-syenite gneiss near Loon Lake in the Adirondack district, New York, as medium grained, grayish green rocks composed of feldspar, pyroxene or hornblende, quartz, and sometimes biotite or garnet. They are undoubtedly metamorphosed intrusive rocks that are intimately associated with gneisses of sedimentary origin. The feldspar is usually a microperthite, but there are usually present in all slides small quantities of oligoclase. The pyroxene is principally augite, but hypersthene is often associated with it. The quartz is in elongated cylindrical individuals. The rocks are autoclastic in structure and are also foliated. In composition they are close to akerite.

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	FeO	CaO	BaO	MgO	K_2O	Na_2O	P_2O_5	Loss	Tot.
63.45	.07	18.31	.42	3.56	2.93	.13	.35	5.15	5.06	tr.	30	= 99.73

It is plain from the analysis that the augite is essentially a calcium, ferrous, aluminous variety unusually rich in alumina. The microperthite is approximately $Or_3\ AC_5$. The syenite is thought to be closely related in origin to the anorthesite of the district.

Baalow[3] gives excellent descriptions of some of the handsome autoclastic conglomerates met with in the Grenville and Hastings series of Ontario. They resemble very closely true conglomerates, but their genesis from banded rocks by dynamic agencies is clearly traced. The illustrations accompanying the descriptions are particularly interesting.

Pirssow[4] collected together in a few pages the evidence that points to the conclusions that the phenocrysts of intrusive rocks are often formed in place, and are not intratelluric. The reasons for this con-

[1] Presidential Address of Arnold Hague, *Geol. Soc. of Washington*, 1899.

[2] *Bull. Geol. Soc. of America*, vol. x, p. 177.

[3] *Ottawa Naturalist*, vol. xii, p. 205, 1899.

[4] *Amer. Jour. Sci.*, vol. vii, p. 271, 1899.

clusion are briefly as follows: porphyritic intrusive masses often possess peripheral portions completely devoid of phenocrysts; dykes connected with large intrusions may be free from phenocrysts, while the mass of the intrusions is filled with them; flat crystals are often arranged haphazard in sheet and dykes and not in obedience to any law of flowage; phenocrysts often enclose crystals identical with those composing the matrix which surrounds them, and, finally, phenocrysts are often surrounded by microlites orientated parallel to the bounding faces of the large crystal, indicating that the latter was growing after the former had crystallized.

The conditions governing the consolidation and crystallization of igneous rocks are decrease in temperature, chemical composition of the magma, the influence of mineralizing vapors, pressure and increasing viscosity. In the view of the author "the greatest determinant in the formation of rock structure is the ratio of time in the fall of temperature between the point where the insolubility and crystallizing moment of a compound begins to the increasing viscosity."

The Inwood limestone [1] in the northern part of Manhattan Island is cut by pegmatite dykes, some of which are well exposed a few blocks north of Fort George. Near the contact the limestone contains tremolite, biotite, and brown tourmaline, while the last-named mineral occurs also in the peripheral portion of the pegmatite.

[1] Eckel. *Amer. Geologist*, vol. xxiii, p. 122, 1899.